

**OPTICAL SWITCHING APPARATUS AND OPTICAL SWITCHING METHOD**

This application is a Continuation Application of a pending application Serial No. 09/946,577, <sup>now U.S.P. No. 6,714,697</sup> as filed on September 5, 2001 under 35 C.F.R. 1.53(b).

**BACKGROUND OF THE INVENTION****Field Of The Invention**

10           The present invention relates to an optical communication device and methods of using this device. In particular, the present invention relates to an optical switching apparatus suitable for switching and outputting optical signals received from a plurality of optical transmission lines to other optical transmission lines, and methods for using this apparatus.

**Prior Art Of The Invention**

15           To handle the sudden increase in data traffic through the Internet, etc. and the quickly growing demands for multimedia communication of images, sound and data, much progress has been made to increase the speed and the capacity of the transmission lines and telecommunication network nodes. To achieve a higher transmission speed,  
20           optical communication devices and optical fiber transmission lines are generally used to transmit signals between telecommunication network nodes.

          In recent years, to handle the ever increasing speed of communication networks and to improve the capacity of communication devices, these communication networks  
25           and devices use optical switching apparatuses such as optical cross-connects (hereafter, referred to as OXC) and optical add-drop multiplexing apparatuses (hereafter, referred to as OADM), which implement switching processes such as switching of transmission lines and switching of circuits without converting optical signals to electric signals before processing the signals as in the conventional communication devices.

30           The OXC or OADM typically includes optical switches as its main components. At present, since a single stage high-capacity optical switch is not commercially available, a high-capacity optical switch is usually implemented through a multi-stage